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Docket No. 1293.1950

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Kyoung-hwan PARK et al.

Application No.: 10/678,750	Group Art Unit: 2627
Filed: October 3, 2003	Examiner: LaTanya BIBBINS

For: APPARATUS AND METHOD FOR GENERATING TRACKING ERROR SIGNAL AND OPTICAL RECORDING/REPRODUCING SYSTEM USING SAME

REPLY BRIEF UNDER 37 C.F.R §§ 41.41

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

Entry of this Reply Brief is respectfully requested. This Reply Brief is submitted in response to the Examiner's Answer mailed December 11, 2009 ("Examiner's Answer") in reply to the Appeal Brief filed August 31, 2009 ("Appeal Brief").

I. STATUS OF CLAIMS

Claims 1-23 are pending in this application at the filing of this Reply Brief. Claims 1, 3, 4, 6, 7 and 9-23 have at least been twice rejected. Claims 2, 5 and 8 are objected to as being dependent on a rejected base claim, but would be allowable if rewritten in independent form. Claims 1, 4, 7, 10, 11, 14, 17, 20 and 23 are independent claims, and claims 2, 3, 5, 6, 8, 9, 12, 13, 15, 16, 18, 19, 21 and 22 are dependent claims.

II. GROUNDS OF REJECTION

Claims 1, 3, 4, 6, 7 and 9-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,787,076 to Deguchi et al. ("Deguchi") in view of the Applicants' Alleged Admitted Art (alleged by the Examiner to be Admitted Prior Art, but contested by the Applicants).

III. REPLY ARGUMENT

Deguchi

At page 21 of the Examiner's Answer, the Examiner alleges that "Deguchi specifically discloses that the low-pass filter in series with the signal output only outputs low frequency components of the signal. Given the understanding of the operation of the low-pass filter, this would also include the DC component and would result in the equivalent frequency response as connecting a high-pass filter in series between an output terminal of the side beam push pull signal generating unit and a ground terminal."

However, the claimed invention recites removing AC components from an SPP signal by using a high pass filter such that only DC components remain, calculating a difference between the MPP signal and the SPP signal whose AC components are removed, and stably generating a tracking error signal regardless of a change in a disc track pitch of an optical disc drive.

Deguchi discloses blocking a high frequency component included in the TE1 signal (the SPP signal), extracting a low frequency component by using a low pass filter, calculating a difference between the TE1 signal and the TE0 signal (the MPP signal) of the low frequency component, and generating a tracking error signal.

Therefore, the claimed invention recites removing the AC components from the SPP signal, subtracting only DC components from the MPP signal, and generating the tracking error signal, while Deguchi discloses filtering only the low frequency component of the SPP signal, subtracting the low frequency component from the MPP signal, and generating the tracking error signal.

While the low-pass filter of Deguchi may remove high frequency AC components and pass through only the low frequency components of the signal, Deguchi does not suggest that the low-pass filter removes an AC component of the signal such that only DC components remain. The low-pass filter of Deguchi removes the high frequency components such that only low frequency components remain, but does not suggest specifically that AC components are removed such that only DC components remain.

Further, the Examiner indicates that the feature of a high pass filter which removes an AC component from the SPP signal such that only DC components of the SPP signal remain, where the high pass filter is connected in series between an output terminal and a ground terminal, as recited in claim 1, is disclosed in col. 4, lines 49-51 of Deguchi.

However, the high pass filter recited in claim 1, for example, removes the AC component from the side beam push pull signal such that only DC components of the SPP signal remain, whereas the low pass filter 18 of Deguchi, cited at col. 4, lines 49-51 filters **only** the low frequency component of a main beam tracking error signal. Thus, the high pass filter of claim 1 that removes the AC component from the side beam push pull signal is distinct from the low pass filter 18 of Deguchi, cited by the Examiner at col. 4, lines 49-51, which filters the low frequency component of the main beam.

The low pass filter 18 of Deguchi only outputs the low frequency component of the signal, but does not remove an AC component from a side beam push pull signal such that only DC components of the signal remain.

Additionally, the differential circuit 110 of Deguchi only performs addition or subtraction between the output of the low pass filter 109 and the tracking error signal T_{E0}. Thus, as the low pass filter 109 extracts only a low frequency component of the tracking error signal T_{E1}, for input to the differential circuit 110, the differential circuit 110 of Deguchi is not a subtractor which generates a tracking error signal by calculating a difference between the MPP signal and the DC components of the SPP signal. The differential circuit 110 of Deguchi takes into account the low frequency component of the tracking error signal T_{E1} and not only DC components of the signal.

Applicant's Alleged Admitted Art and Obvious Matter of Design Choice

The Examiner indicates that the alleged admitted art includes the fact that providing a low pass filter in series with a signal output results in the equivalent frequency response as connecting a high pass filter to ground at the signal output (i.e. removing AC components from a signal and allowing DC components to pass).

However, the high pass filter (or the low pass filter disposed to have characteristics equivalent to the high pass filter) recited in claim 1 of the present application extracts only the DC component from the SPP signal, which is not disclosed by Deguchi and is not suggested by replacing the low pass filter of Deguchi with a high pass filter. In particular, the low pass filter 18 of Deguchi filters through only the low frequency component of the signal, but does not extract (filter) through only the DC component of the signal, as recited in independent claim 1.

When analyzing a circuit with respect to a filter, the feature of filtering the low frequency component of an input signal and the feature of filtering the DC component of the input signal result in completely different responses. Thus, the high pass filter recited in claim 1 of the present invention and the low pass filter 18 or 109 of Deguchi produce completely different characteristics.

Col. 6, lines 48-58 of Deguchi discusses that the differential circuit 110 performs addition or subtraction based on a phase difference of an output signal of the low pass filter 109. However, such disclosure of performing addition or subtraction in the differential circuit 110 based on a phase difference of an output signal of the low pass filter 109 indicates that an AC component is output from the low pass filter 109.

In contrast, the subtractor recited in claim 1 of the present invention, for example, performs subtraction irrespective of a phase since an AC component is removed from the signal such that only the DC component is output from the high pass filter.

As described above, a signal output from the subtractor recited in claim 1 of the present invention and a signal output from the differential circuit 110 disclosed in Deguchi have completely different characteristics due to a difference in the characteristics of the high pass filter recited in claim 1 of the present application and the low pass filter disclosed in Deguchi.

Even assuming, *arguendo*, that the low pass filter of Deguchi is able to be replaced with a high pass filter, the Examiner provides no suggestion or apparent reason to suggest why the low pass filter of Deguchi would be replaced with a filter that passes through only the DC components of the signal. As discussed above, the present invention requires the removal of an AC component such that only DC components remain. Deguchi does not appear to suggest that only DC components remain after filtering.

The Examiner alleges that it would have been an obvious matter of design choice to replace the low pass filter of Deguchi with a high pass filter to ground at a signal output and such would result in the removal of AC components from the signal such that only DC components are allowed to pass. However, merely alleging that it would have been an obvious matter of design choice does not meet the requisite level necessary to comport with either KSR International v. Teleflex or M.P.E.P. §2144.04(VI)(C), an argument that the Examiner has failed to address in the Examiner's Response. In particular, M.P.E.P. § 2144.04(VI)(C) states that "[t]he mere fact that a worker in the art could rearrange the parts of the reference device to meet the terms of the claims on appeal is not by itself sufficient to support a finding of obviousness. The prior art must provide a motivation or reason for the worker in the art, without the benefit of appellant's specification, to make the necessary changes in the reference device." *Ex parte Chicago Rawhide Mfg. Co.*, 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984). KSR also reiterates that there must be some apparent reason with rational underpinning to have led one of ordinary skill in the art to have combined the references.

Here, "since the applicant has not disclosed that a high-pass filter solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with a low-pass filter in series" is not an apparent reason or motivation to suggest replacing the low pass filter of Deguchi with a high pass filter that removes an AC component from a side beam push pull signal such that only DC components remain. The Examiner has failed to provide an adequate rationale for replacing the low pass filter of Deguchi.

Further, as previously discussed, the applicants have disclosed that the high pass filter that removes AC components such that only DC components remain solves a stated problem. In particular, because AC components are removed from the SPP signal, as a result, a DPP signal can be stably generated regardless of whether a disc track pitch is changed. Thus, a tracking error signal generating unit according to the present invention is capable of stably generating a tracking error signal on DVDs and CDs with different disc track pitches.

Change the Principle of Operation of the Deguchi

Additionally, as the differential circuit 110 performs addition or subtraction based on a phase difference of an output signal of the low pass filter 109, such would indicate that an AC component is output from the low pass filter 109, instead of only DC components. As such, if Deguchi were to be modified to include a high pass filter to ground at the signal output, in place of the low pass filter, where the high pass filter removes an AC component from the SPP signal such that only DC components remain, the differential circuit 110 would not be able to determine whether to perform addition or subtraction between the output of the low pass filter 109 and the tracking error signal T_{E0} because this determination is based on the phase difference of an output signal of the low pass filter.

If the AC component is removed and only DC components remain, the differential circuit 110 of Deguchi would not be able to perform in the manner suggested by Deguchi. In particular, the differential circuit 110 performs addition or subtraction based on a phase difference of an output signal of the low pass filter 109, which indicates that the AC component is output from the low pass filter 109. If the filter 109 were replaced with a filter that only outputs DC components, then the principle of operation of at least the differential circuit 110 of Deguchi would be changed, which is not permitted by M.P.E.P. § 2141.01.

Therefore, as Deguchi, even "modified" by the alleged admitted art does not suggest "a high-pass filter which removes an AC component from the SPP signal such that only DC components of the SPP signal remain; and a subtractor which generates a tracking error signal by calculating a difference between the MPP signal and the DC components of the SPP signal," as recited in independent claim 1, and similarly in independent claims 4, 7, 10, 11, 14, 17, 20 and 23, as the Examiner has failed to provide an adequate apparent reason with rational underpinning for combining the "references," and as such a combination would change the principle of operation of Deguchi, claims 1, 4, 7, 10, 11, 14, 17, 20 and 23 patentably distinguish over the "references" relied upon.

In addition, claims 3, 6, 9, 12, 13, 15, 16, 18, 19, 21 and 22 depend from independent claims 1, 4, 7, 10, 11, 14, 17, 20 and 23 and therefore patentably distinguish over the "references" relied upon for at least the reasons noted above.

IV. CONCLUSION

In view of the law and facts stated herein, the Appellant respectfully submits that the Examiner has failed set forth a *prima facie* obviousness case against the pending claims.

For all the foregoing reasons, the Appellant respectfully submits that the cited prior art does not teach or suggest the presently claimed invention and that the Examiner's findings of unpatentability regarding claims 1, 3, 4, 6, 7 and 9-23 should be reversed and the patentability over the presently cited references be affirmed.

The Commissioner is hereby authorized to charge any additional fees required in connection with the filing of this Reply Brief to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: 2/12/10

By Kari P. Footland
Kari P. Footland
Registration No. 55,187

1201 New York Ave, N.W., Suite 700
Washington, D.C. 20005
Telephone: (202) 434-1500
Facsimile: (202) 434-1501